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# A FEW ASTRONOMICAL INSTRUMENTS

UNIV. OF CALIFORNIA

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WARNER & SWASEY,
CLEVELAND, OHIO, U. S. A.
M D C C C C

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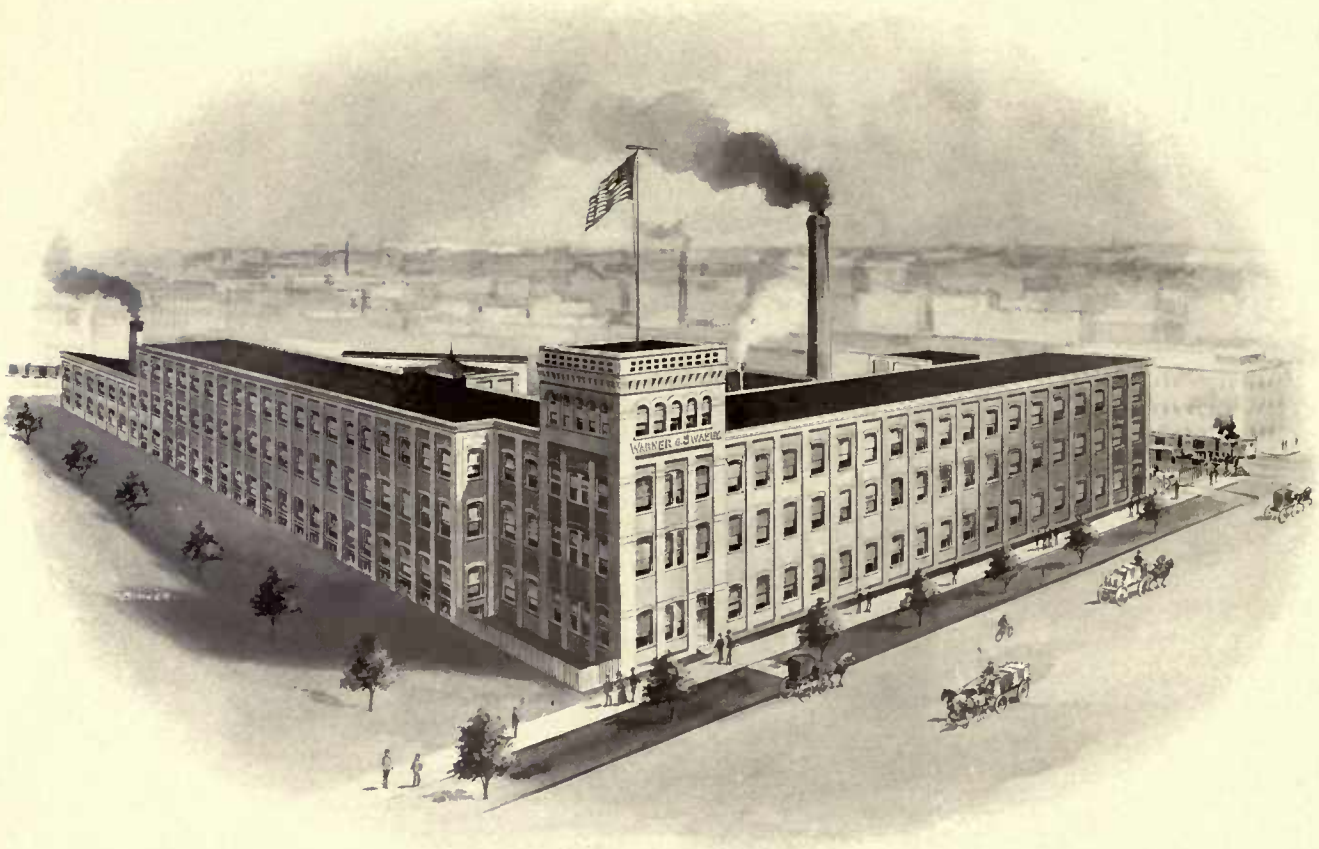


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THE WORKS OF
WARNER & SWASEY

# Introduction

THE number of leading observatories for which we have designed and made astronomical instruments affords us an opportunity to bring together a series of illustrations which we feel will not only be of general interest, but also of service in showing the magnitude and completeness of modern astronomical equipment.

We feel that the illustrations speak for themselves, and it has therefore seemed to us that a mere mention of some of the instruments and observatories would be even preferable to elaborate description.

The objectives of the three largest telescopes, those of the Yerkes, Lick and Naval Observatories, were made by Messrs. Alvan Clark & Sons, while the objectives, and, in fact, all the optical parts for the other instruments shown, are from the works of Mr. J. A. Brashear.

We are glad to acknowledge our indebtedness to the astronomers of the several observatories for their courtesy in supplying certain of the photographs here reproduced.

WORCESTER R. WARNER
AMBROSE SWASEY

R. M. HUNT
ARCHITECT

PRIVATE OBSERVATORY OF
MESSRS. WARNER & SWASEY

Plate I

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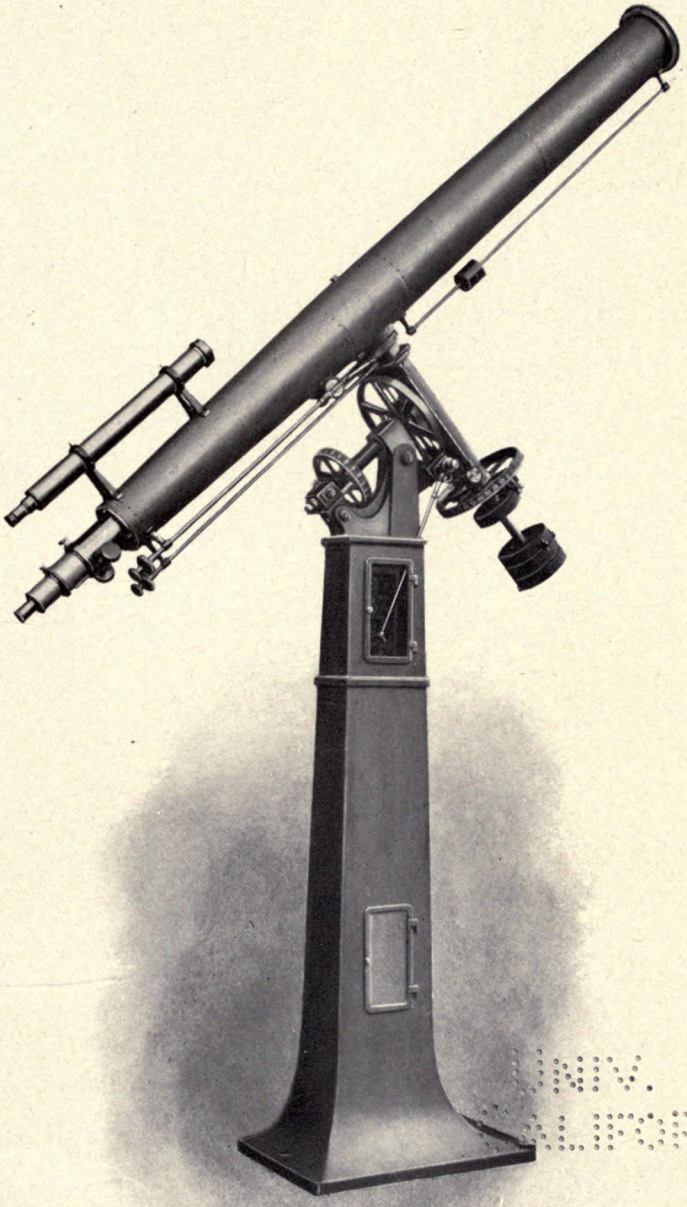

6-INCH TELESCOPE

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$1620

Plate II

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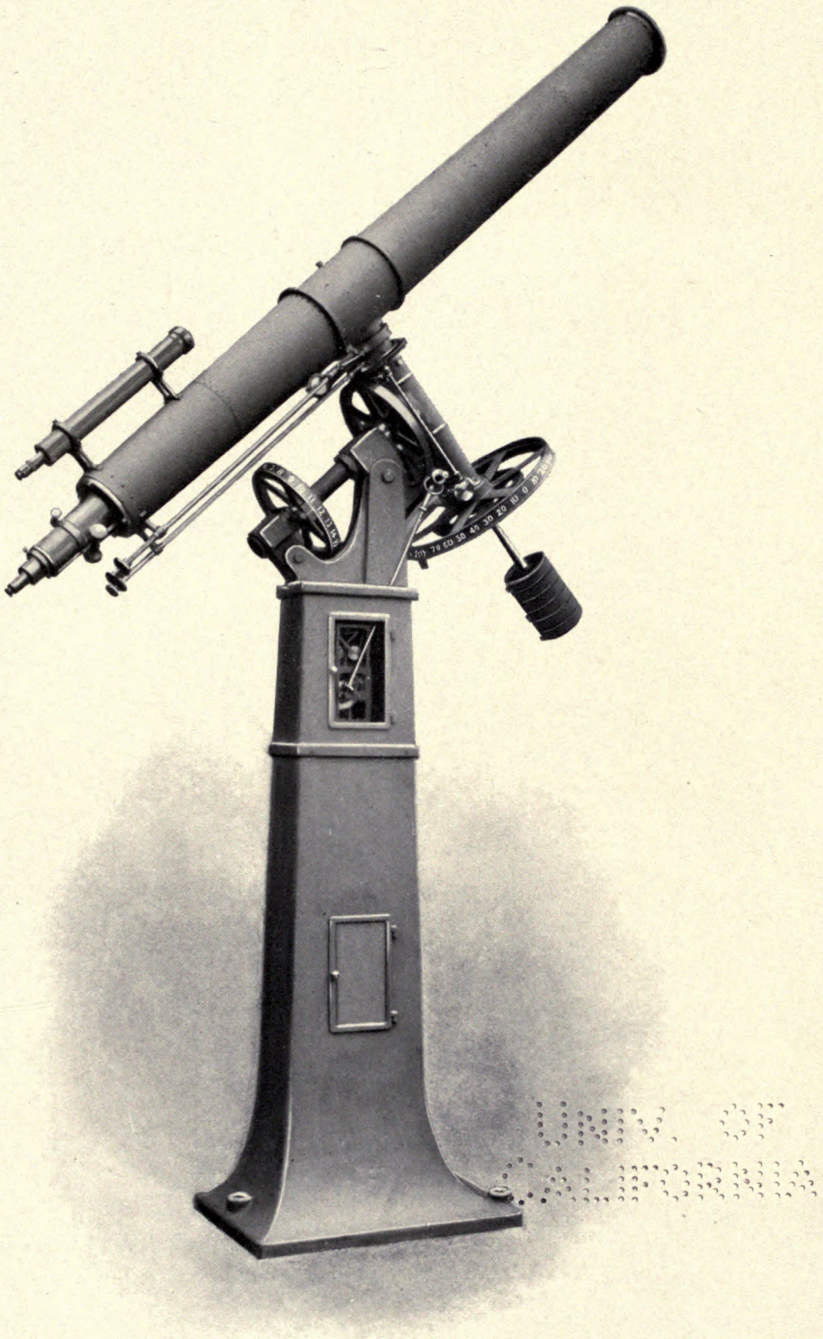

8-INCH TELESCOPE

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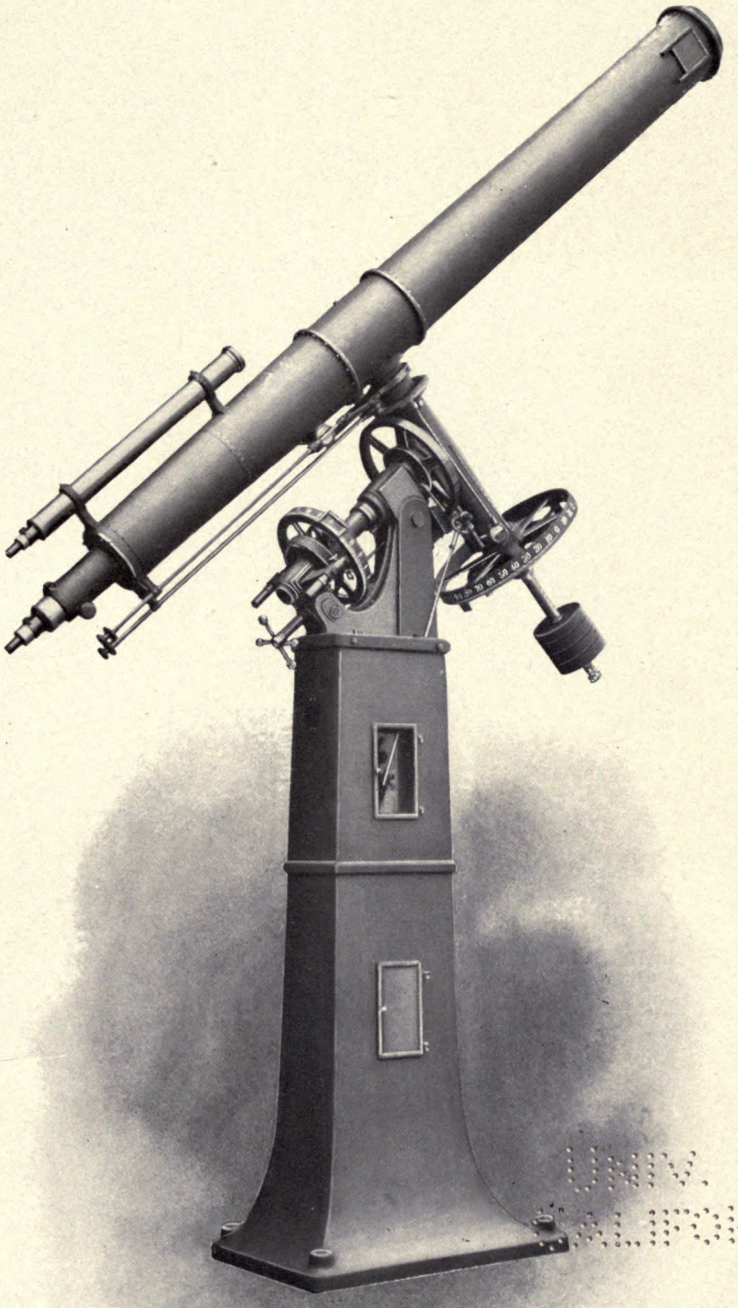

12-INCH TELESCOPE

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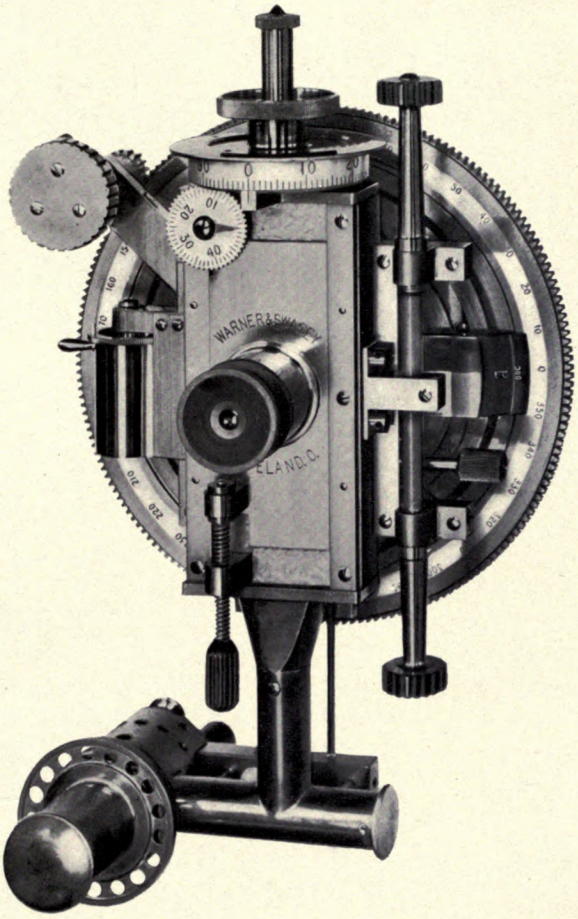

POSITION MICROMETER

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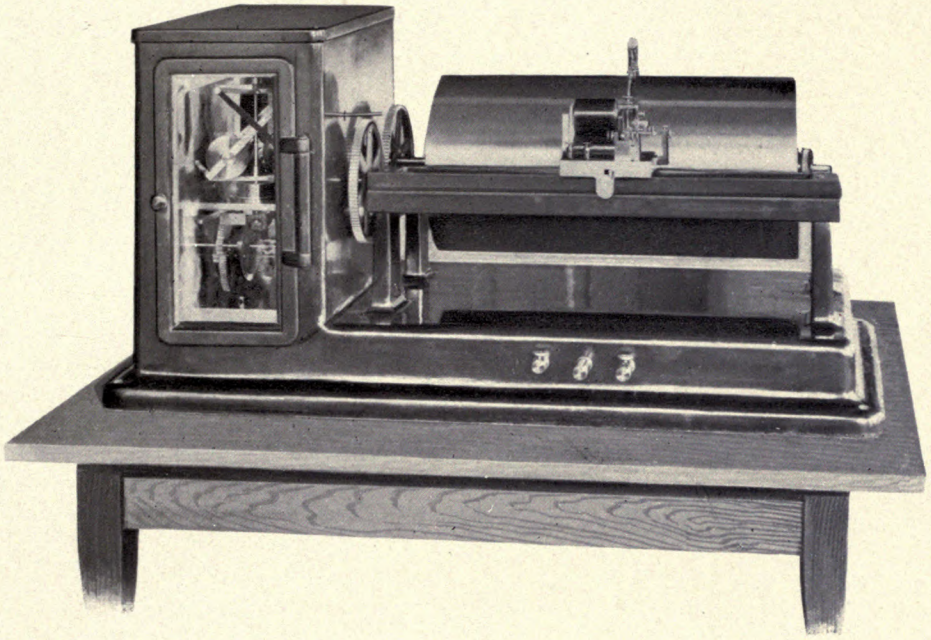

STANDARD CHRONOGRAPH

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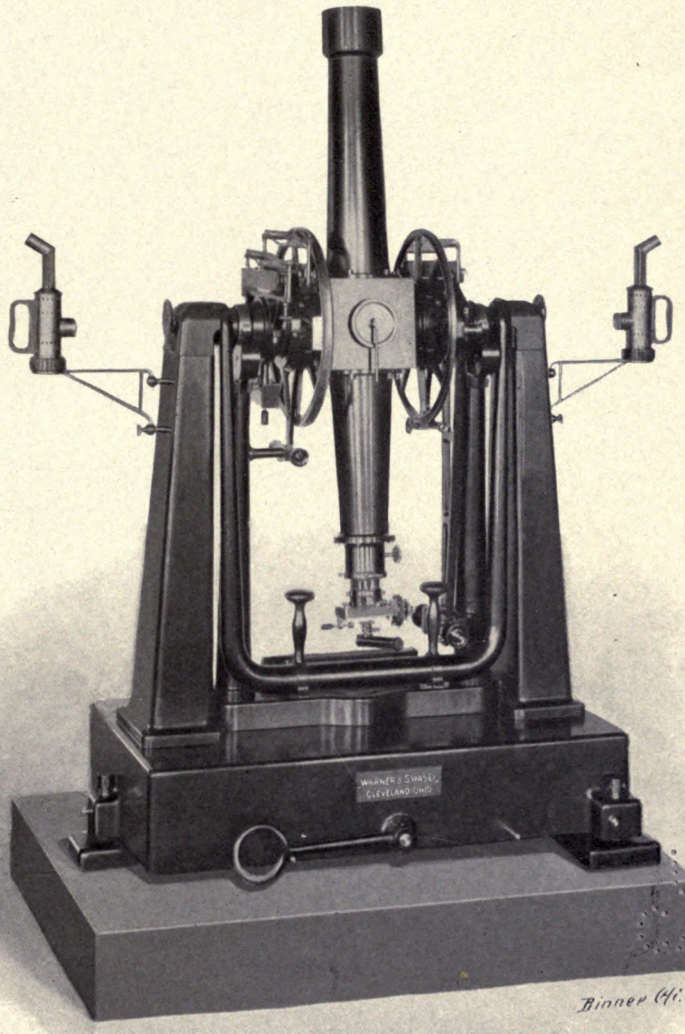


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3-INCH COMBINED TRANSIT AND ZENITH TELESCOPE
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FROM THE WORKS OF
WARNER & SWASEY

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Plate VII

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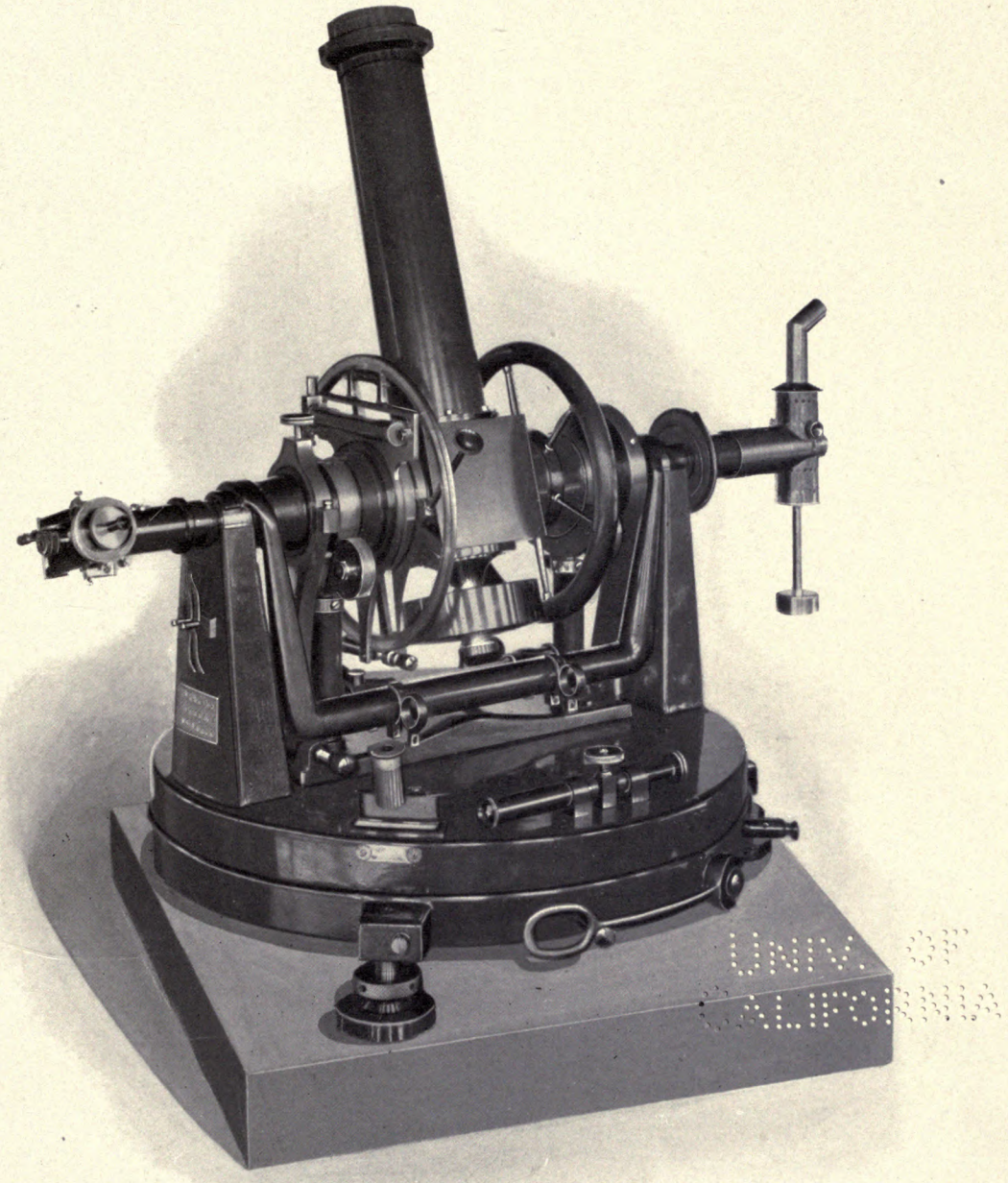

3-INCH UNIVERSAL PRISM TRANSIT FOR THE
UNIVERSITY OF PENNSYLVANIA

FROM THE WORKS OF
WARNER & SWASEY

Plate VIII

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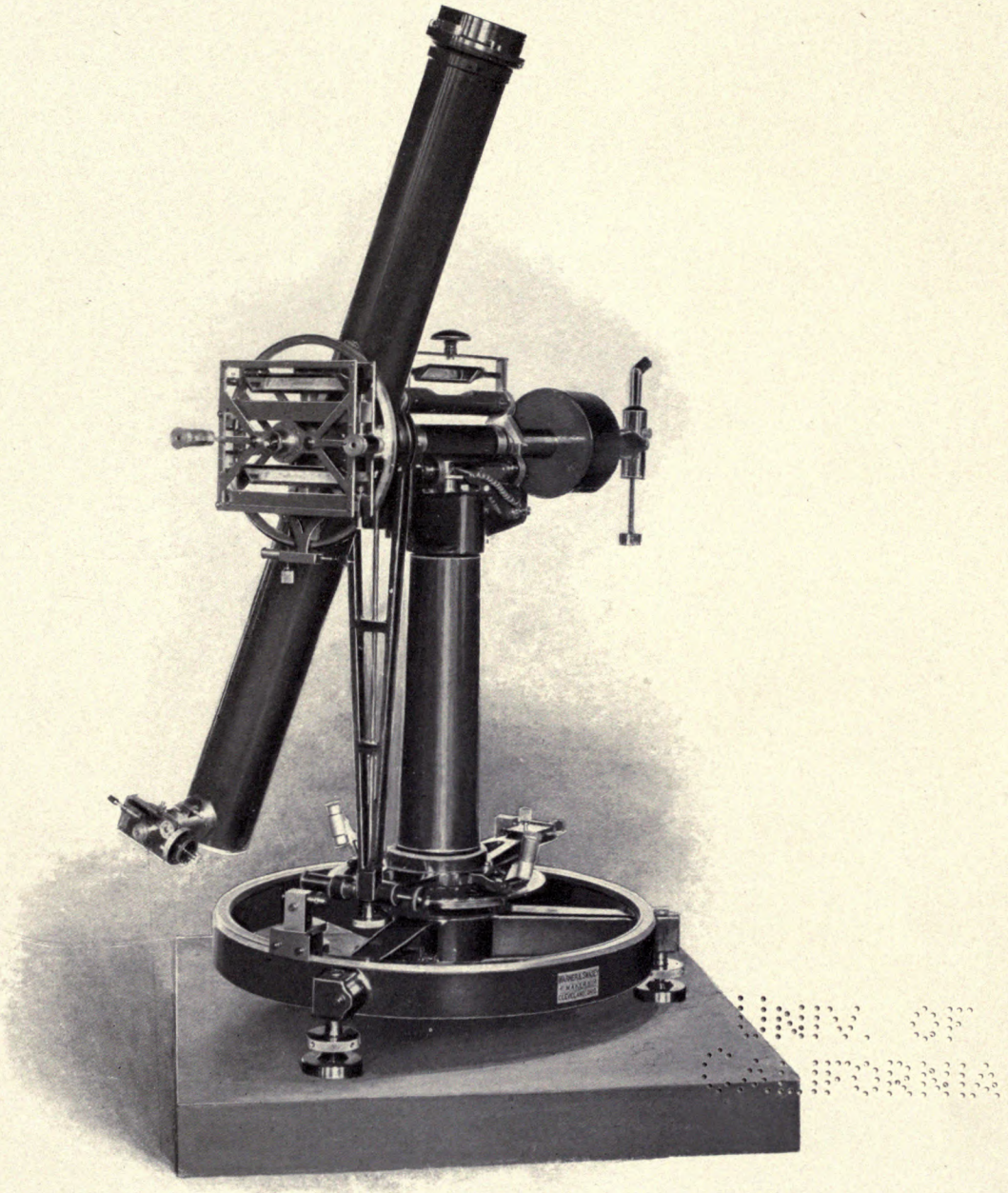

4-INCH ZENITH TELESCOPE FOR THE
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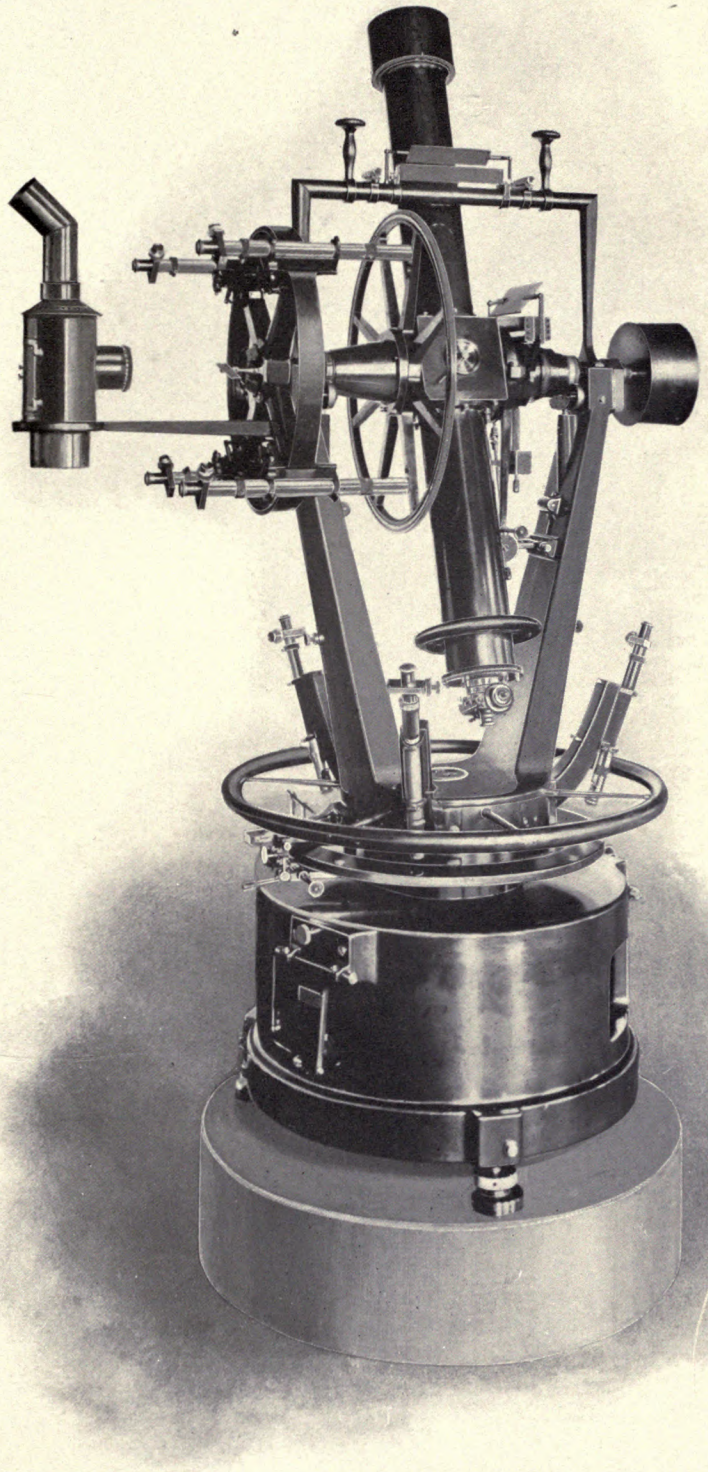

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5-INCH ALT-AZIMUTH FOR THE U. S. NAVAL OBSERVATORY

Plate X

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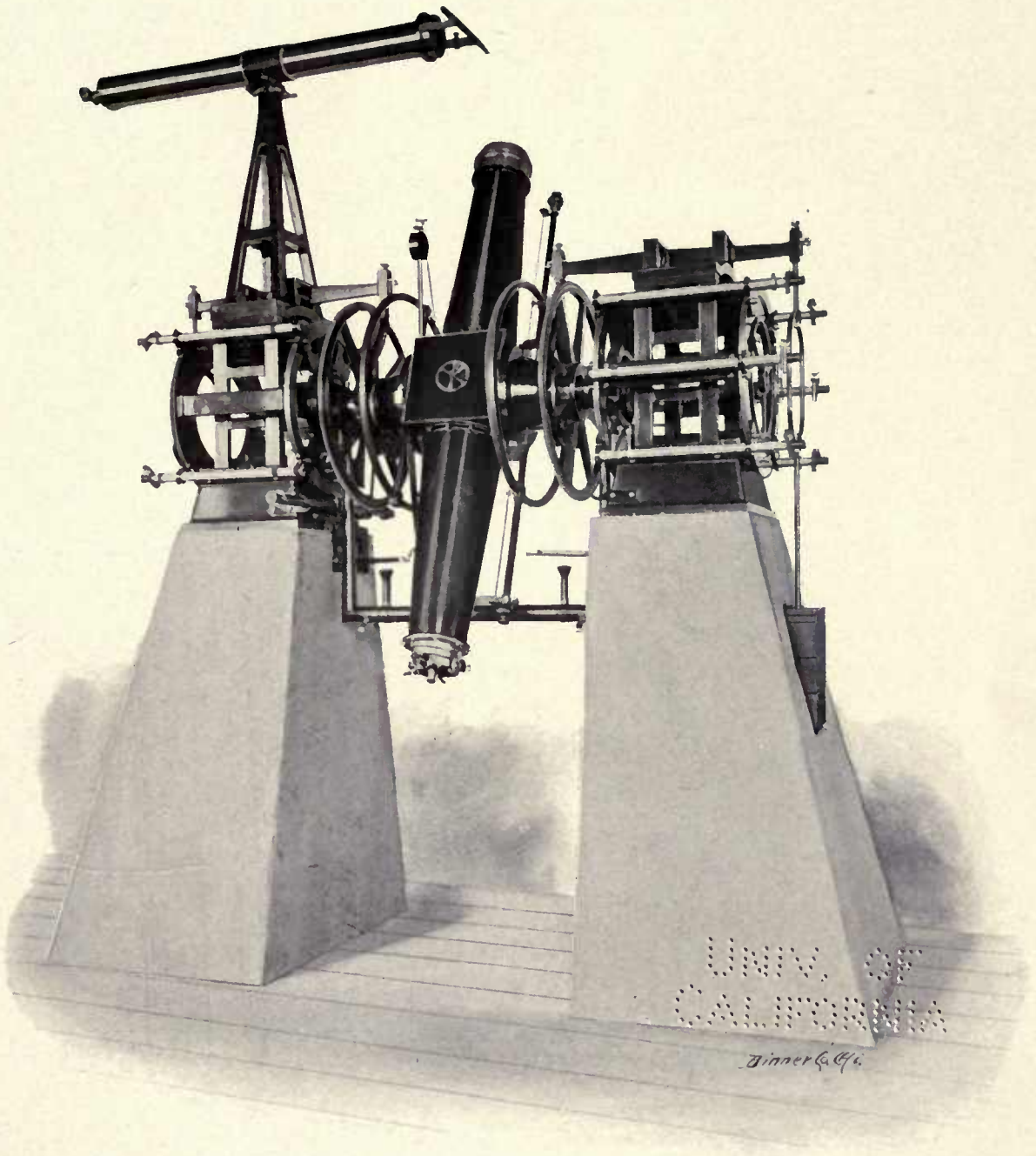


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6-INCH STEEL MERIDIAN CIRCLE FOR THE
U. S. NAVAL OBSERVATORY

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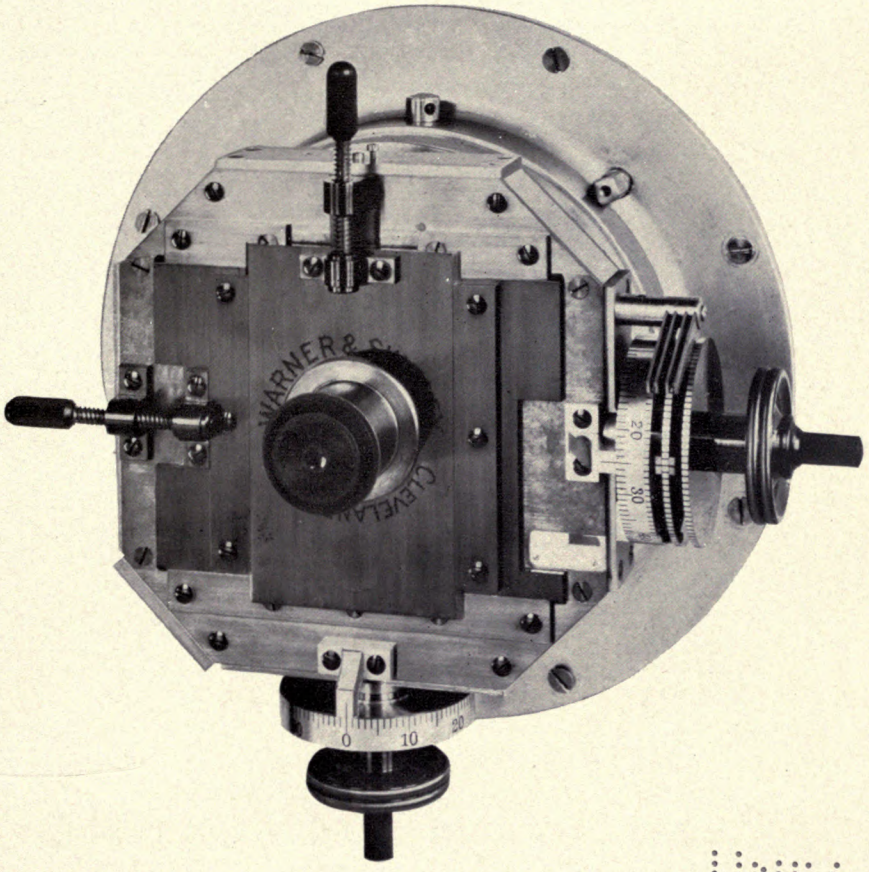
Plate XI

St. Mary's
Maryland

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STEEL MICROMETER FOR THE 6-INCH MERIDIAN CIRCLE
OF THE U. S. NAVAL OBSERVATORY

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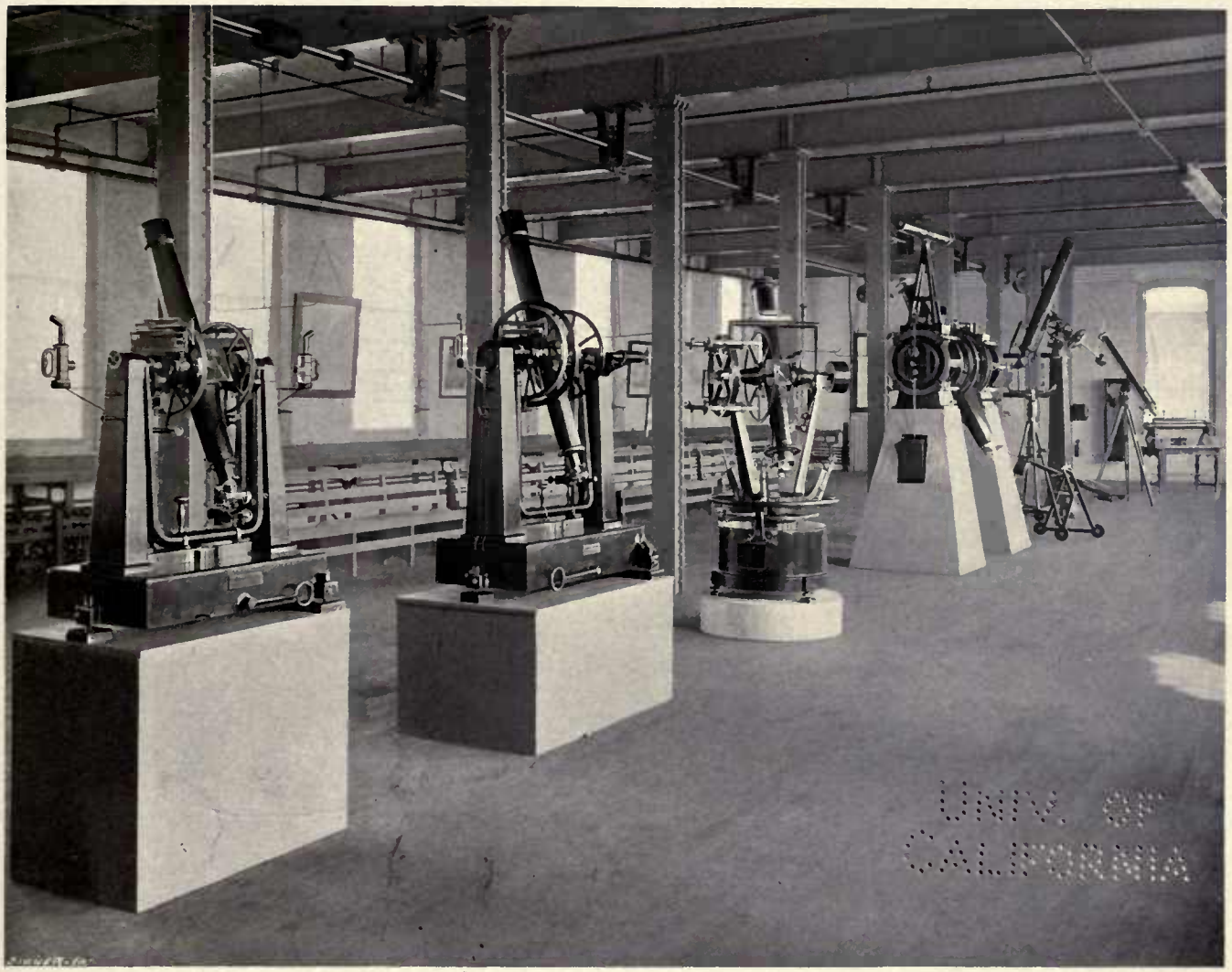
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SOME ASTRONOMICAL INSTRUMENTS MADE FOR THE U. S. NAVAL OBSERVATORY, UNIVERSITY OF PENNSYLVANIA AND OTHERS

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Smithsonian

40-INCH AUTOMATIC GRADUATING ENGINE
MADE AND IN USE

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Plate XIV

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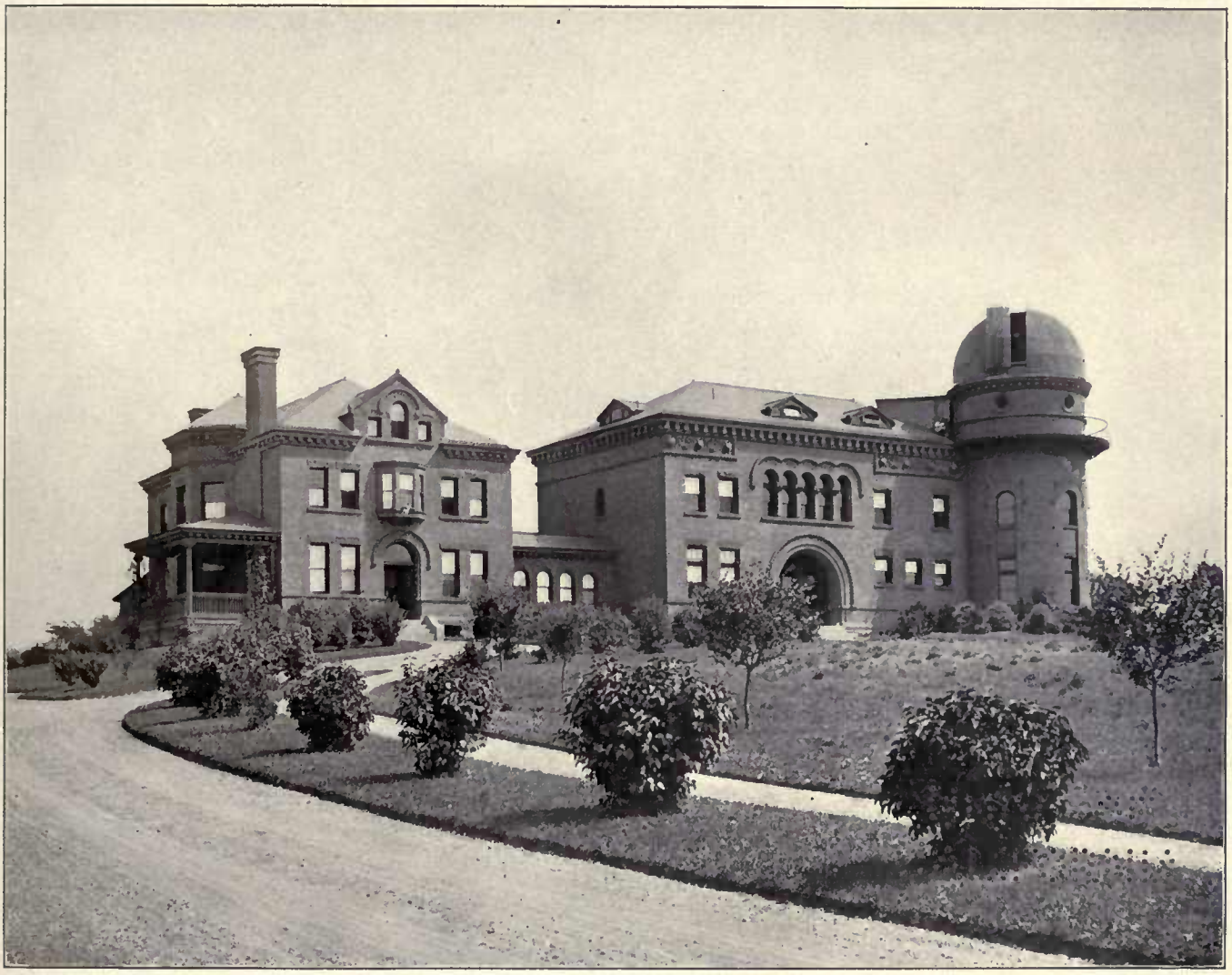

A. W. FULLER
ARCHITECT

DUDLEY OBSERVATORY, ALBANY, NEW YORK

12-INCH TELESCOPE

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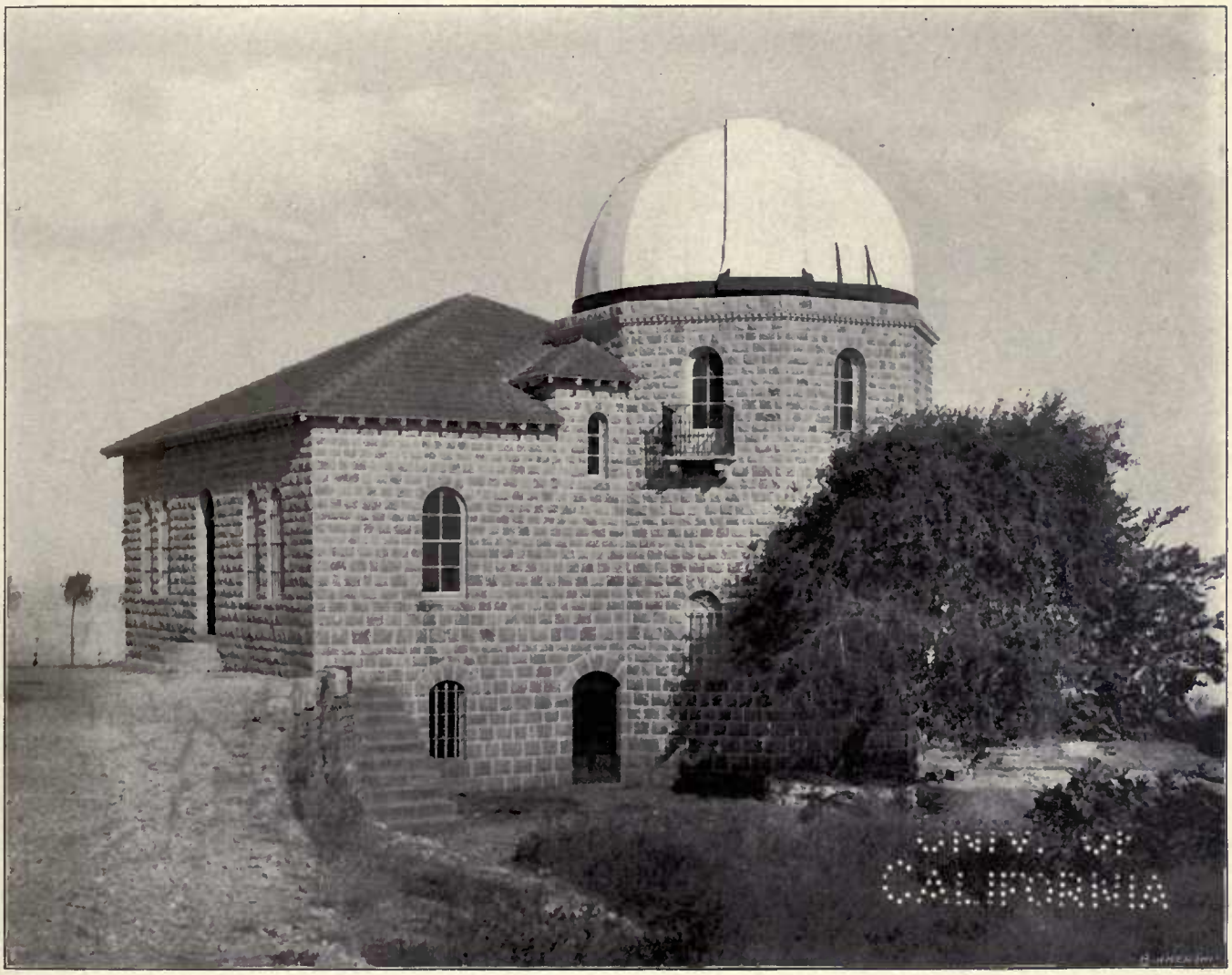


OBSERVATORY OF THE SYRIAN PROTESTANT COLLEGE
BEIRUT, SYRIA

12-INCH TELESCOPE

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Plate XVI

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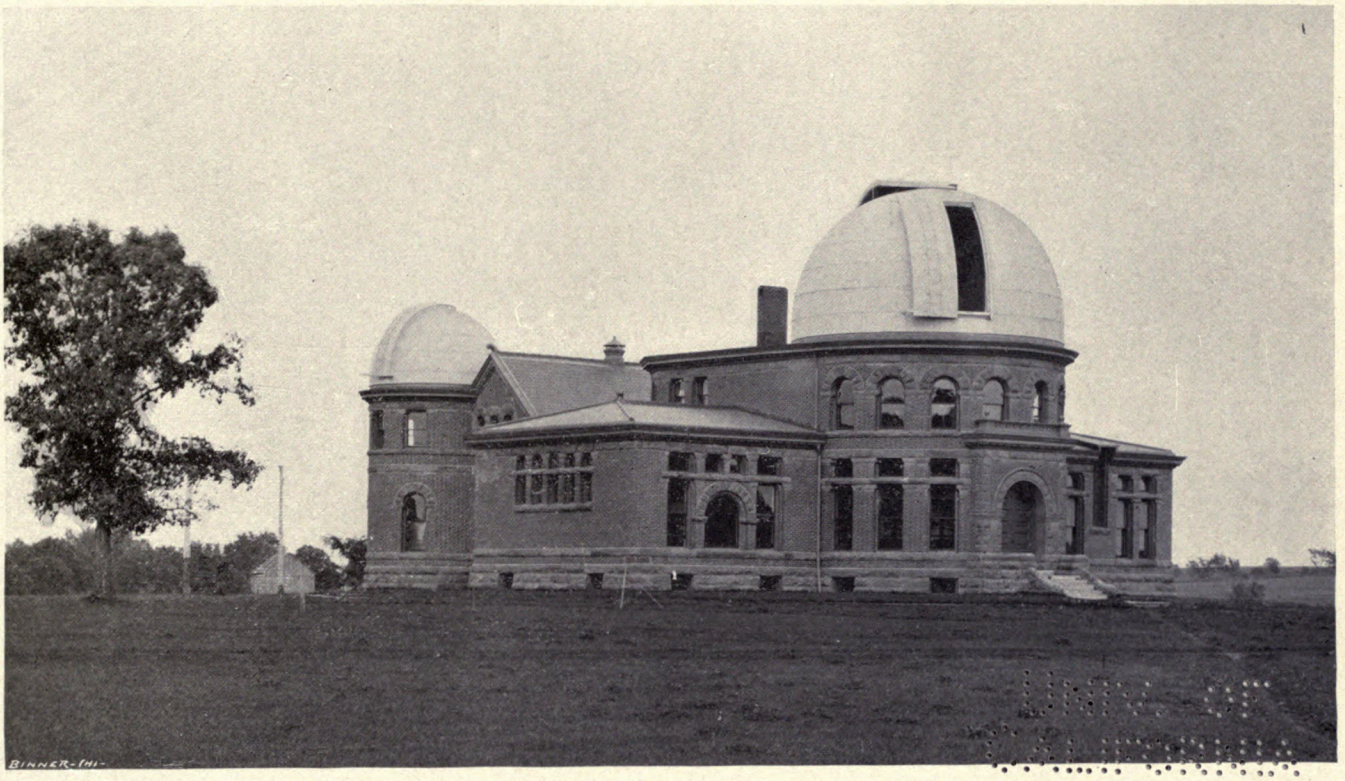

J. W. STEVENS
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THE GOODSELL OBSERVATORY, CARLETON COLLEGE
NORTHFIELD, MINNESOTA

16-INCH TELESCOPE, AND
17 AND 30-FOOT DOMES

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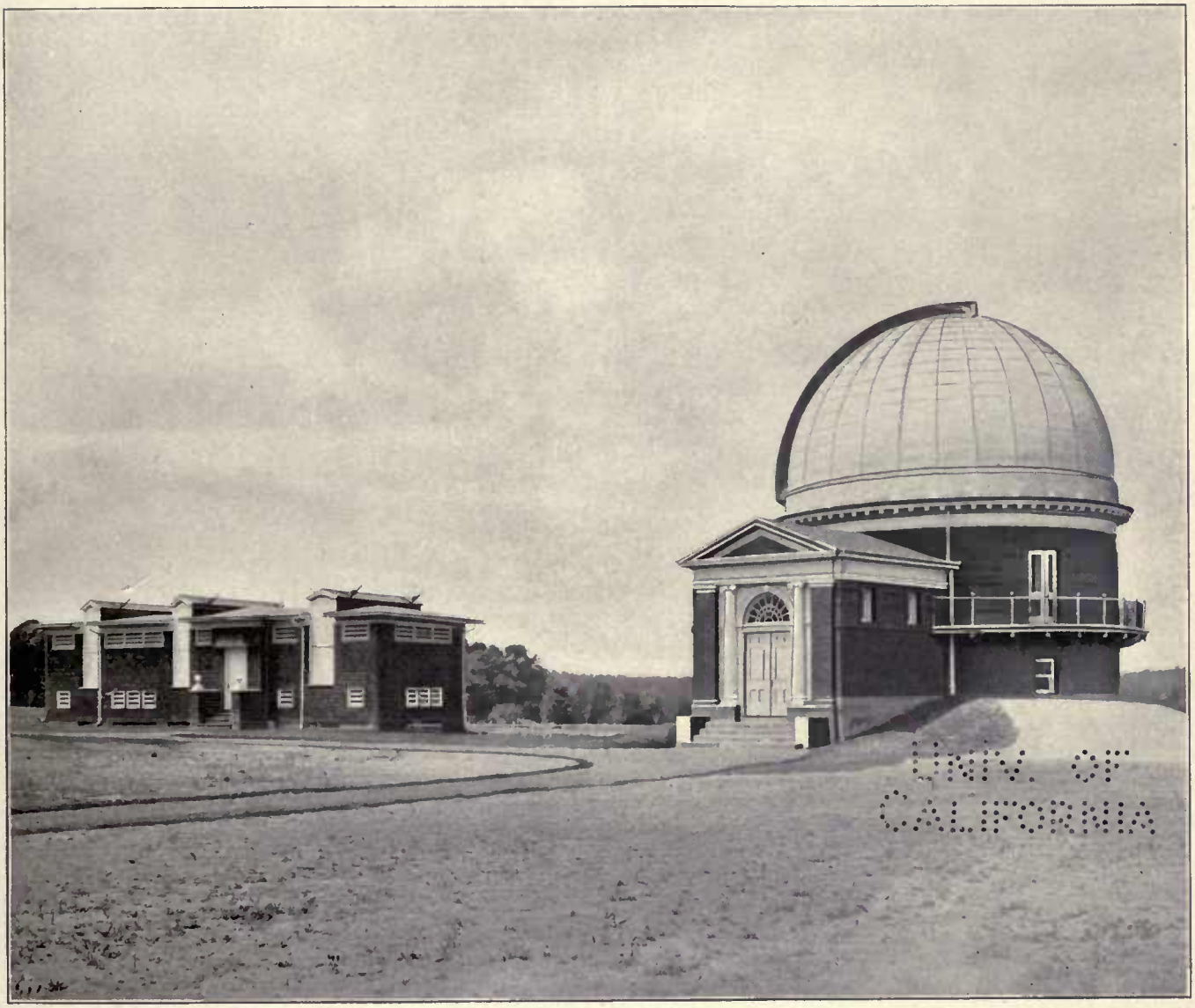


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THE FLOWER OBSERVATORY, UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA, PENNSYLVANIA

30-FOOT DOME
18-INCH TELESCOPE
4-INCH MERIDIAN CIRCLE
4-INCH ZENITH TELESCOPE
3-INCH UNIVERSAL PRISM TRANSIT

FROM THE WORKS OF
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U. S. NAVAL OBSERVATORY, WASHINGTON, D. C.

26-INCH TELESCOPE
45 AND 26-FOOT DOMES
6-INCH STEEL MERIDIAN CIRCLE
5-INCH ALT-AZIMUTH, ETC.

FROM THE WORKS OF
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R. M. HUNT
ARCHITECT

THE U. S. NAVAL OBSERVATORY BUILDING IN WHICH THE 26-INCH EQUATORIAL IS MOUNTED. TELESCOPE, ELEVATING FLOOR, AND DOME

FROM THE WORKS OF
WARNER & SWASEY

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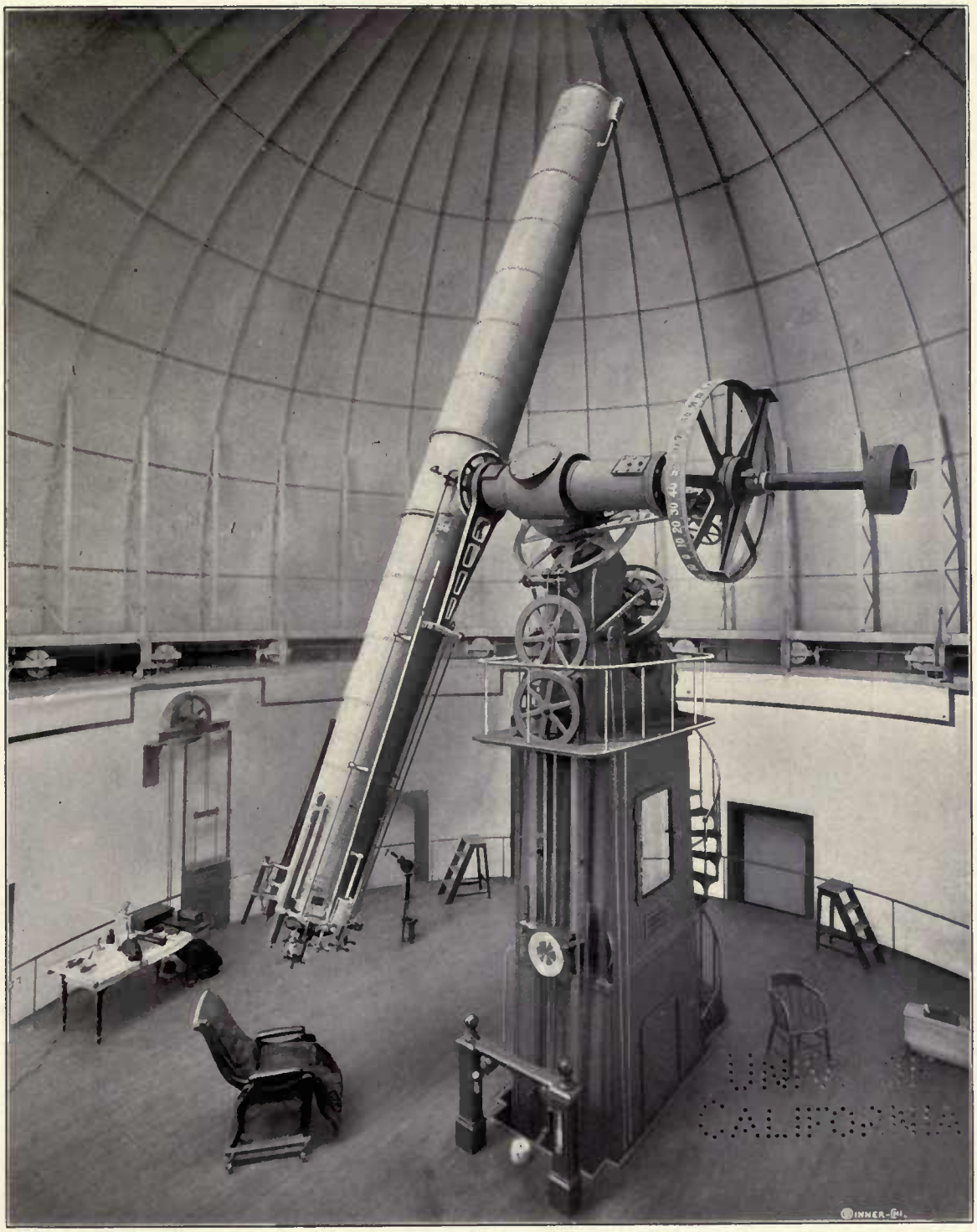

26-INCH TELESCOPE OF THE U. S. NAVAL OBSERVATORY

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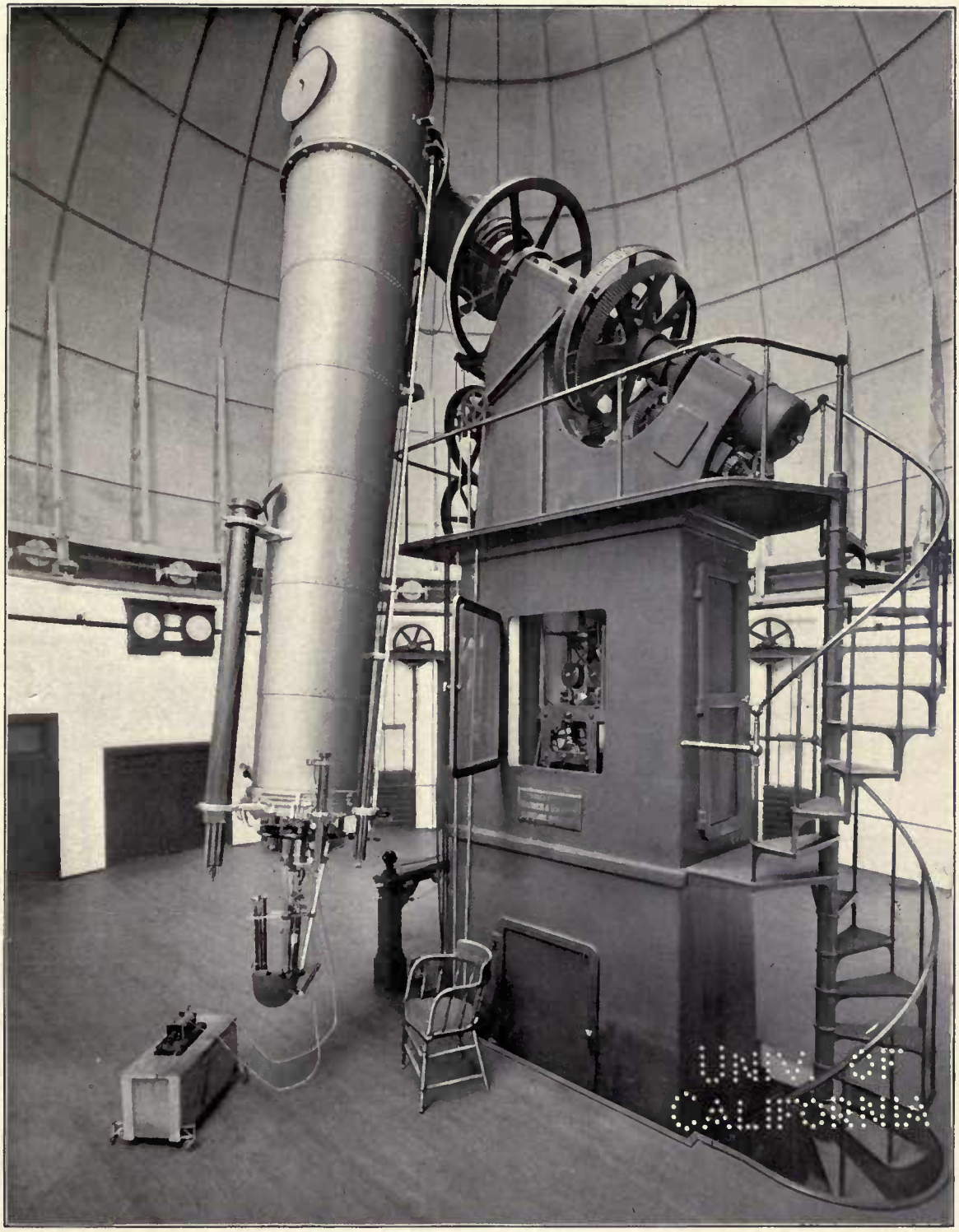
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26-INCH TELESCOPE OF THE U. S. NAVAL OBSERVATORY

FROM THE WORKS OF
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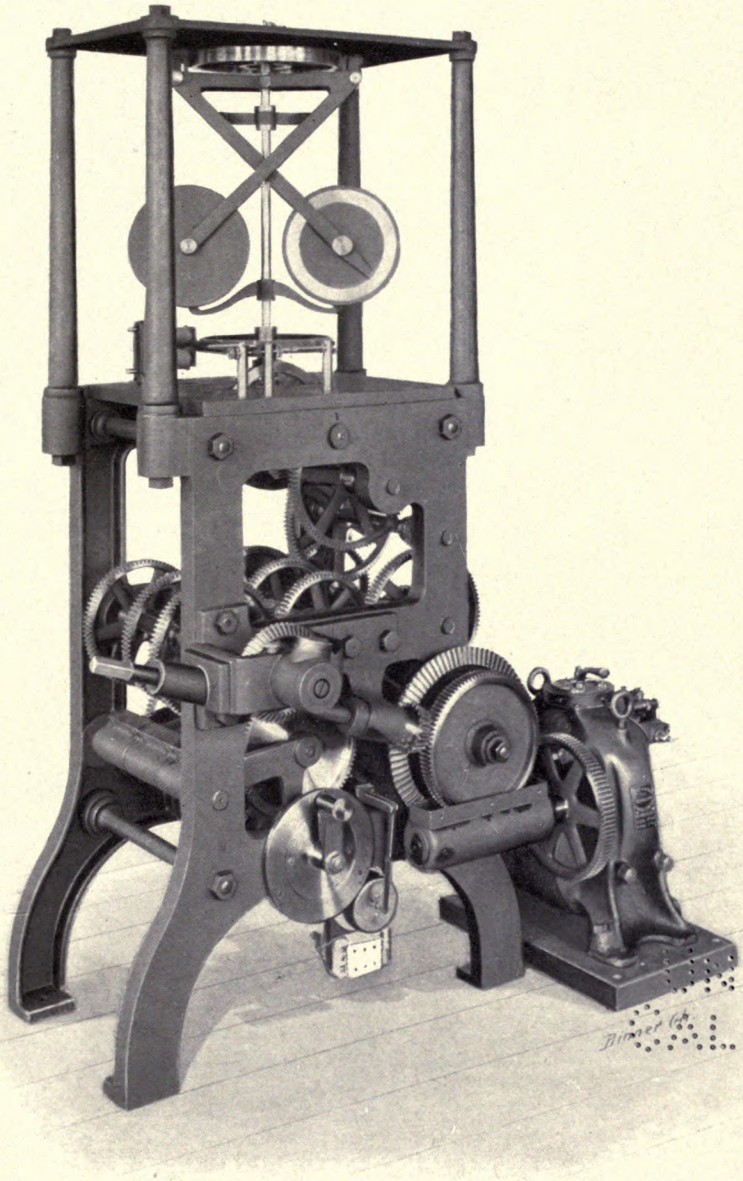
UNIVERSITY OF CALIFORNIA



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DRIVING CLOCK OF THE 26-INCH TELESCOPE OF THE
U. S. NAVAL OBSERVATORY

FROM THE WORKS OF
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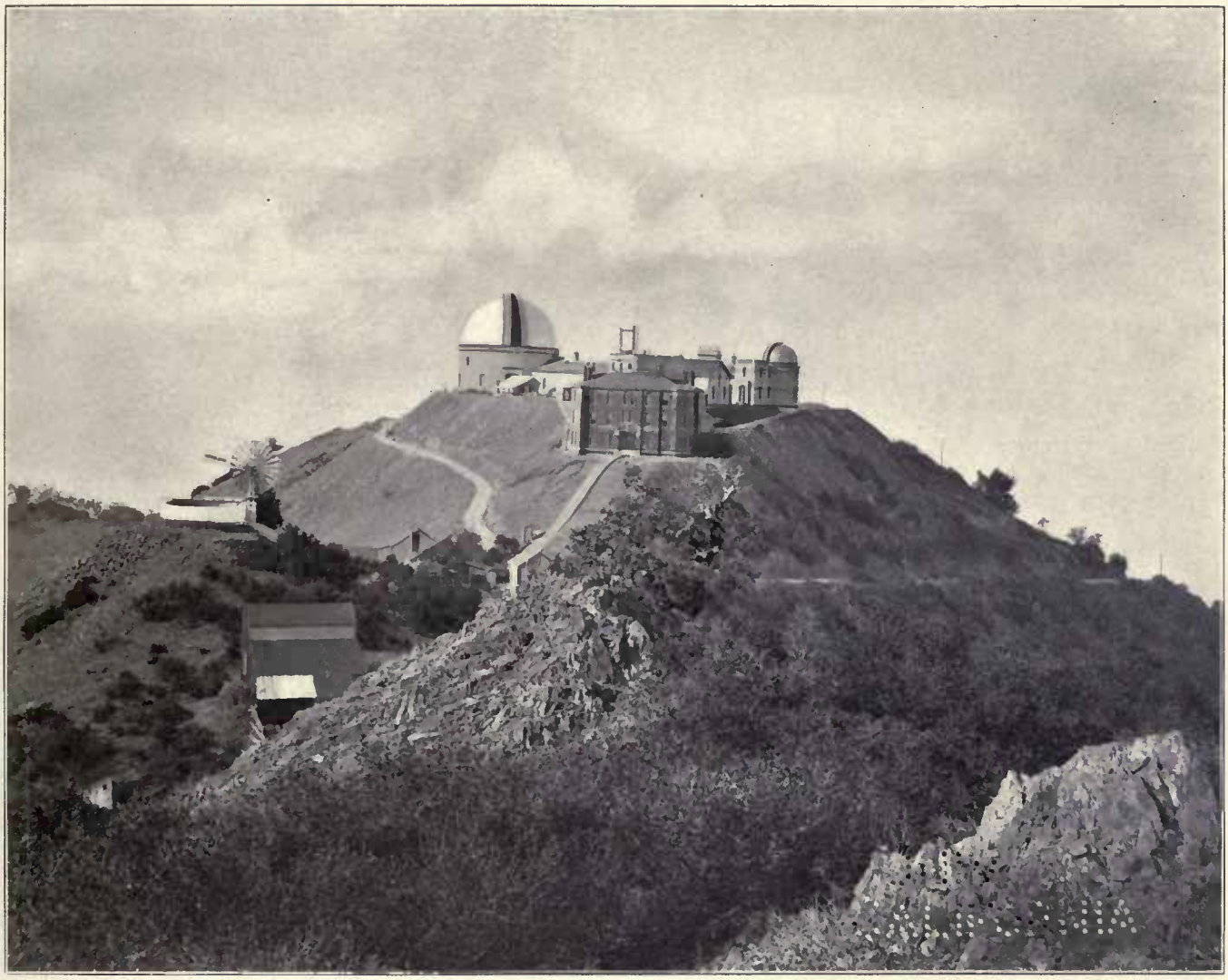

WRIGHT & SANDERS
ARCHITECTS

THE LICK OBSERVATORY, UNIVERSITY OF CALIFORNIA
MOUNT HAMILTON, CALIFORNIA

36-INCH TELESCOPE

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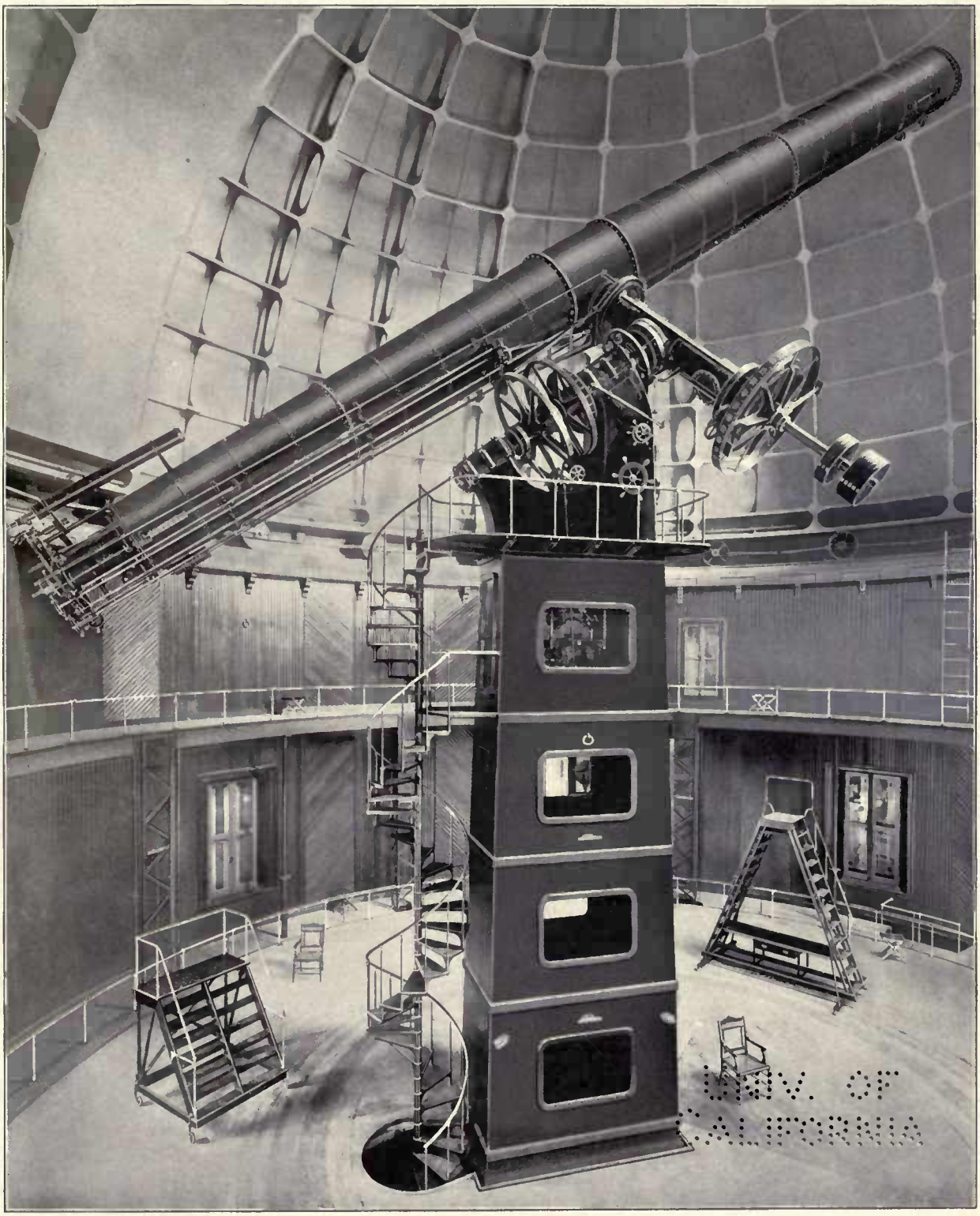

36-INCH LICK TELESCOPE

FROM THE WORKS OF
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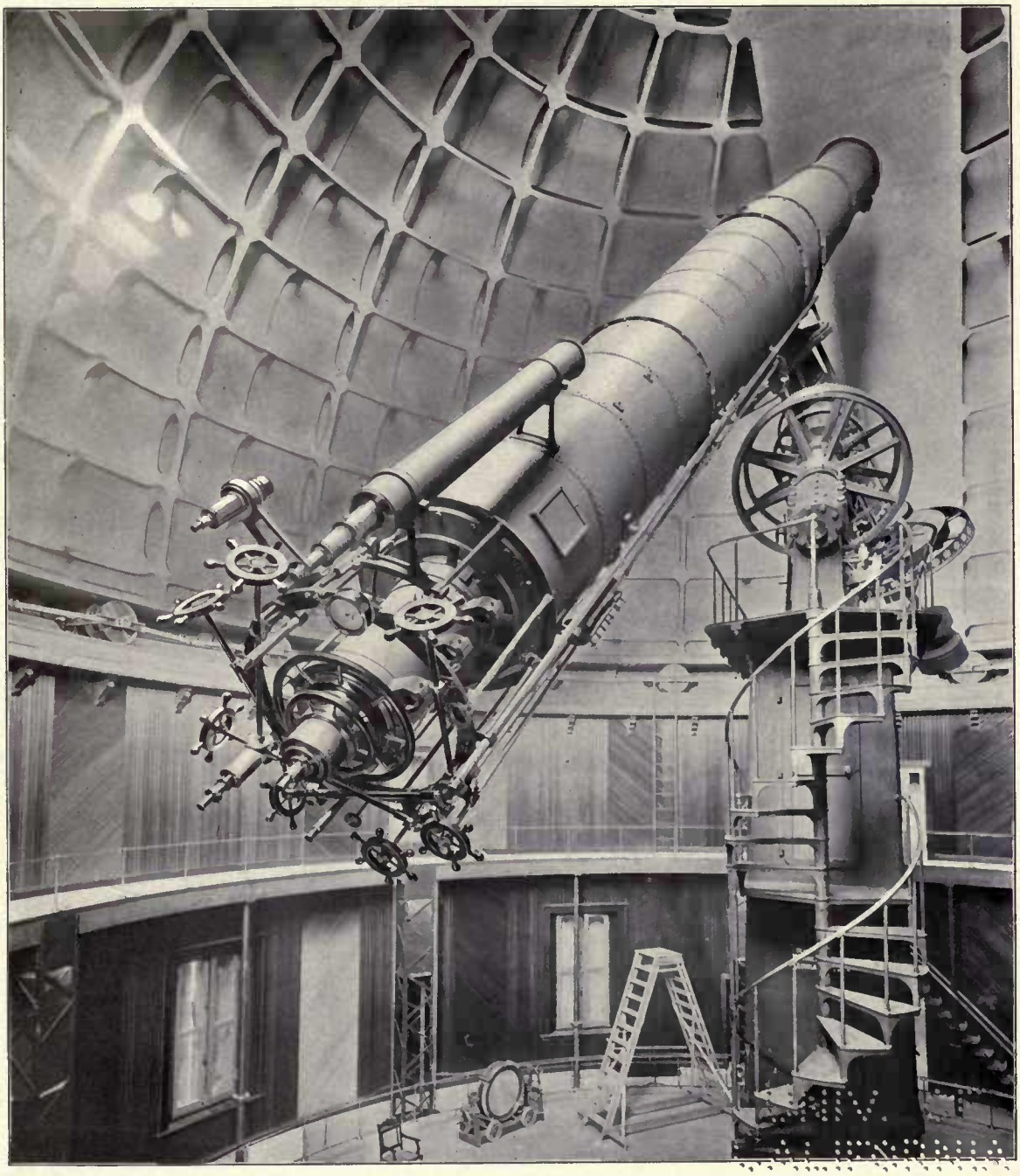

36-INCH LICK TELESCOPE

FROM THE WORKS OF
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Plate XXVI

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EYE END OF THE 36-INCH LICK TELESCOPE

FROM THE WORKS OF
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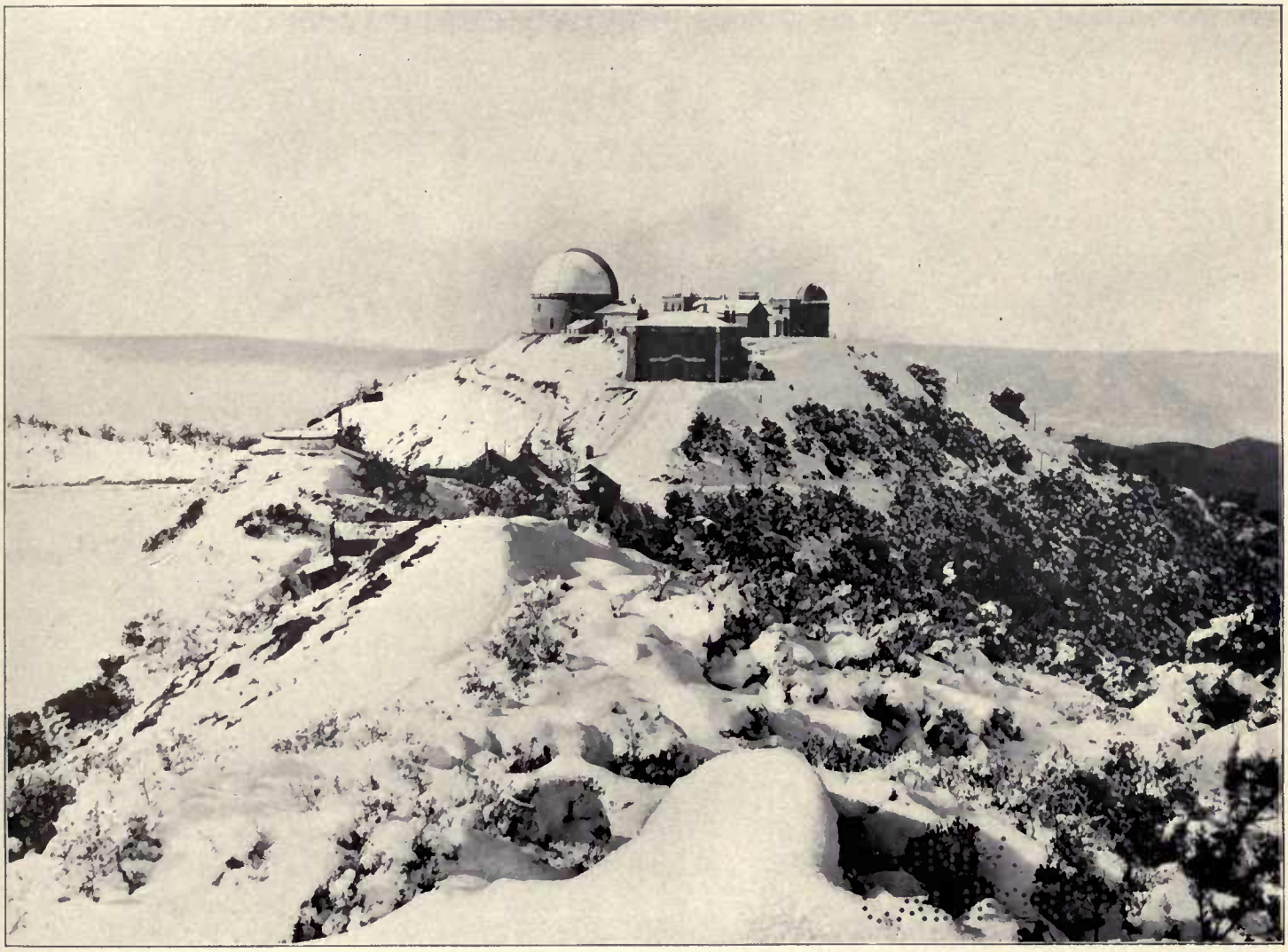
Plate XXVII



THE LICK OBSERVATORY IN WINTER

36-INCH TELESCOPE

FROM THE WORKS OF
WARNER & SWASEY

Plate XXVIII

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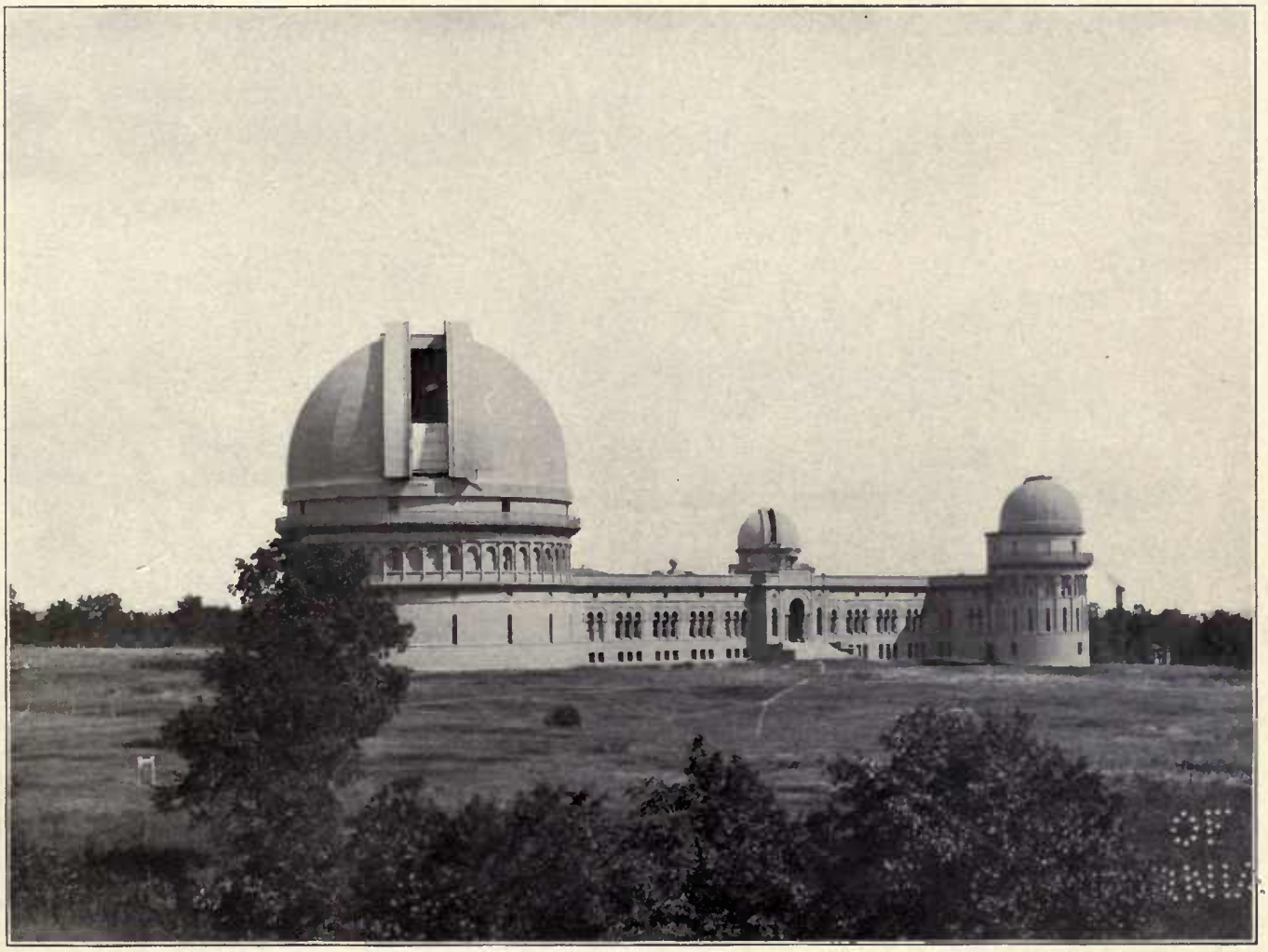

HENRY IVES COBB
ARCHITECT

THE YERKES OBSERVATORY, UNIVERSITY OF CHICAGO
WILLIAMS BAY, WISCONSIN

40-INCH AND 12-INCH TELESCOPES
75-FOOT ELEVATING FLOOR
90, 30 AND 26-FOOT DOMES

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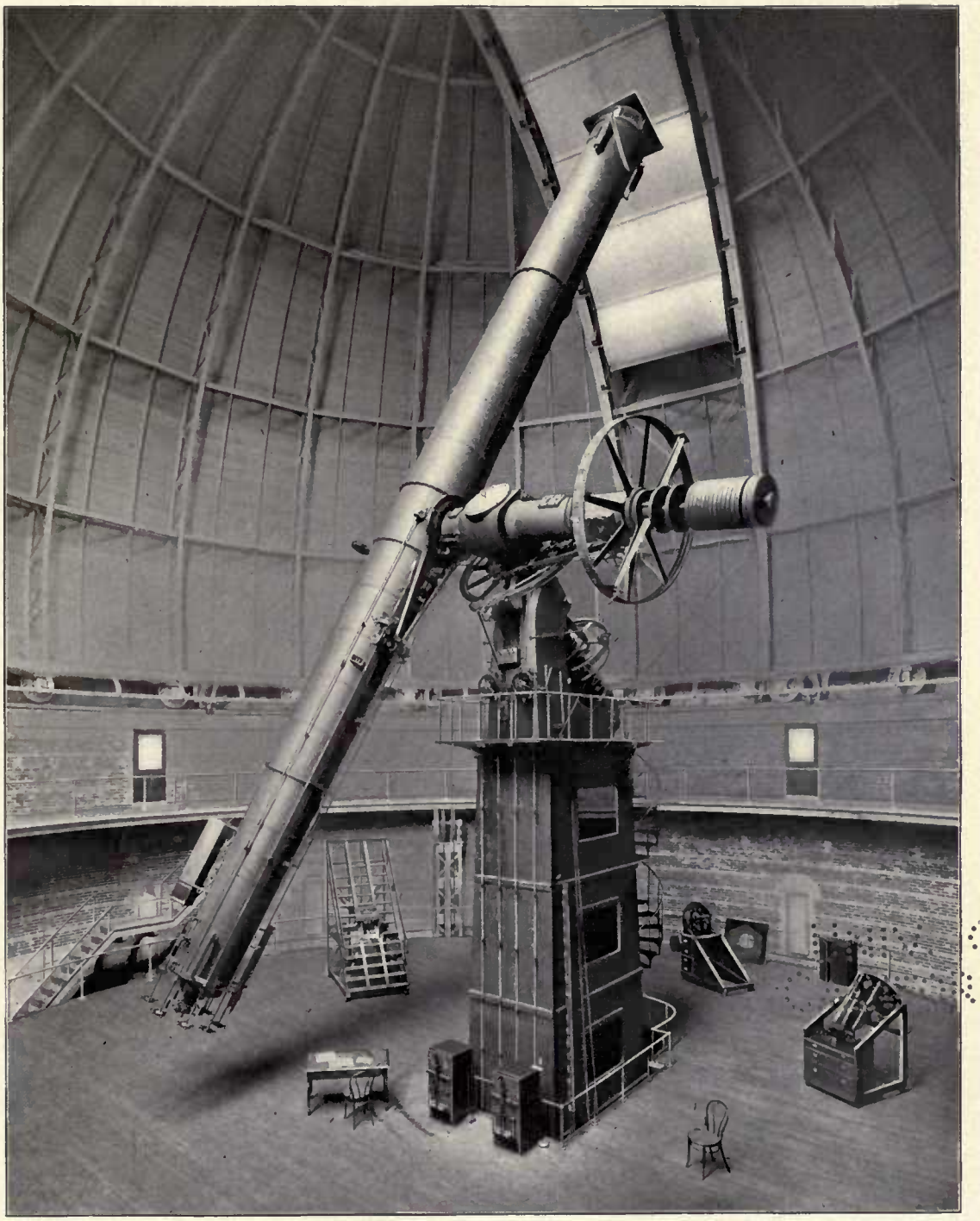
THE NEW WORLD



40-INCH TELESCOPE OF THE YERKES OBSERVATORY

FROM THE WORKS OF
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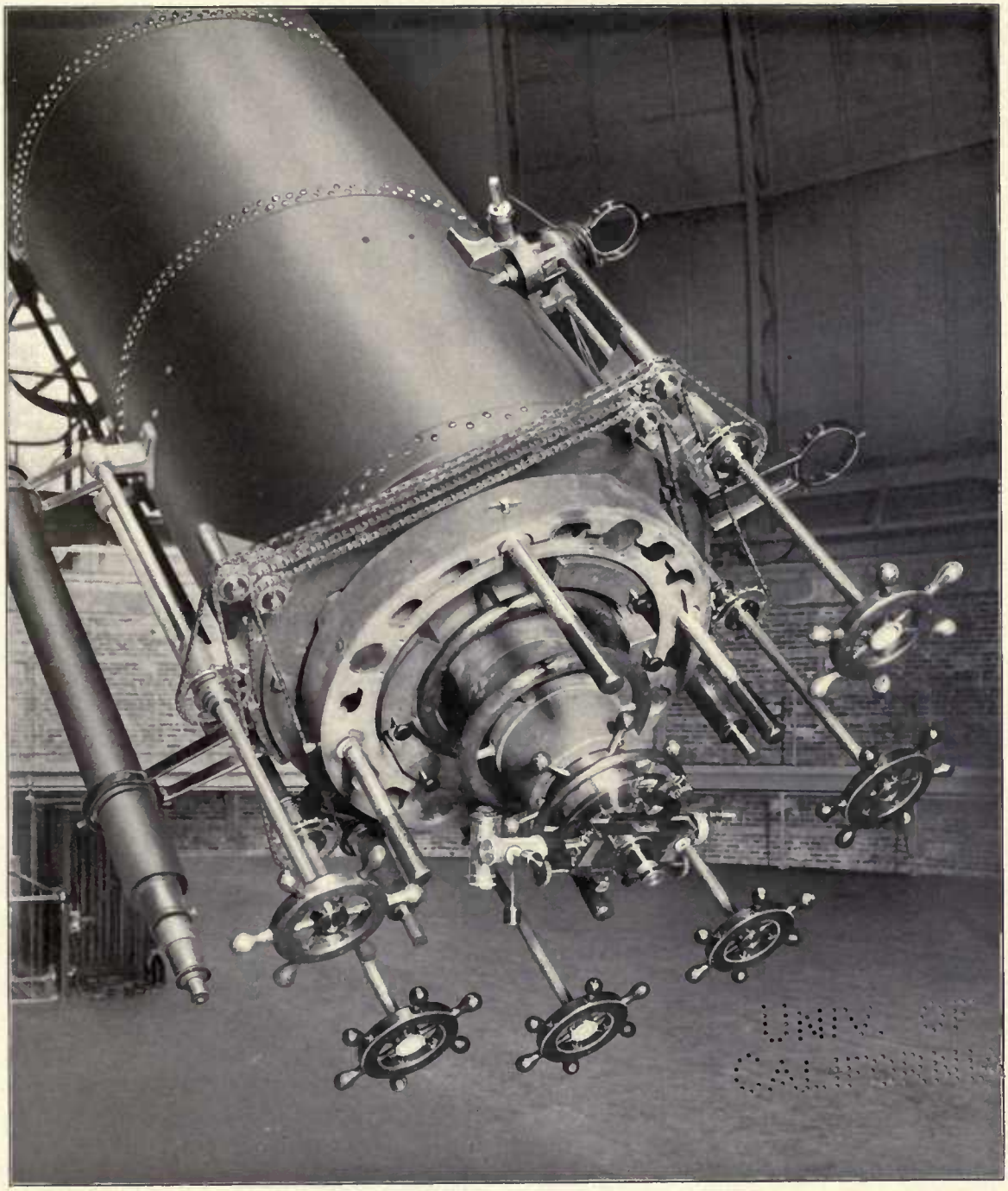
Plate XXX



EYE END OF THE 40-INCH YERKES TELESCOPE

FROM THE WORKS OF
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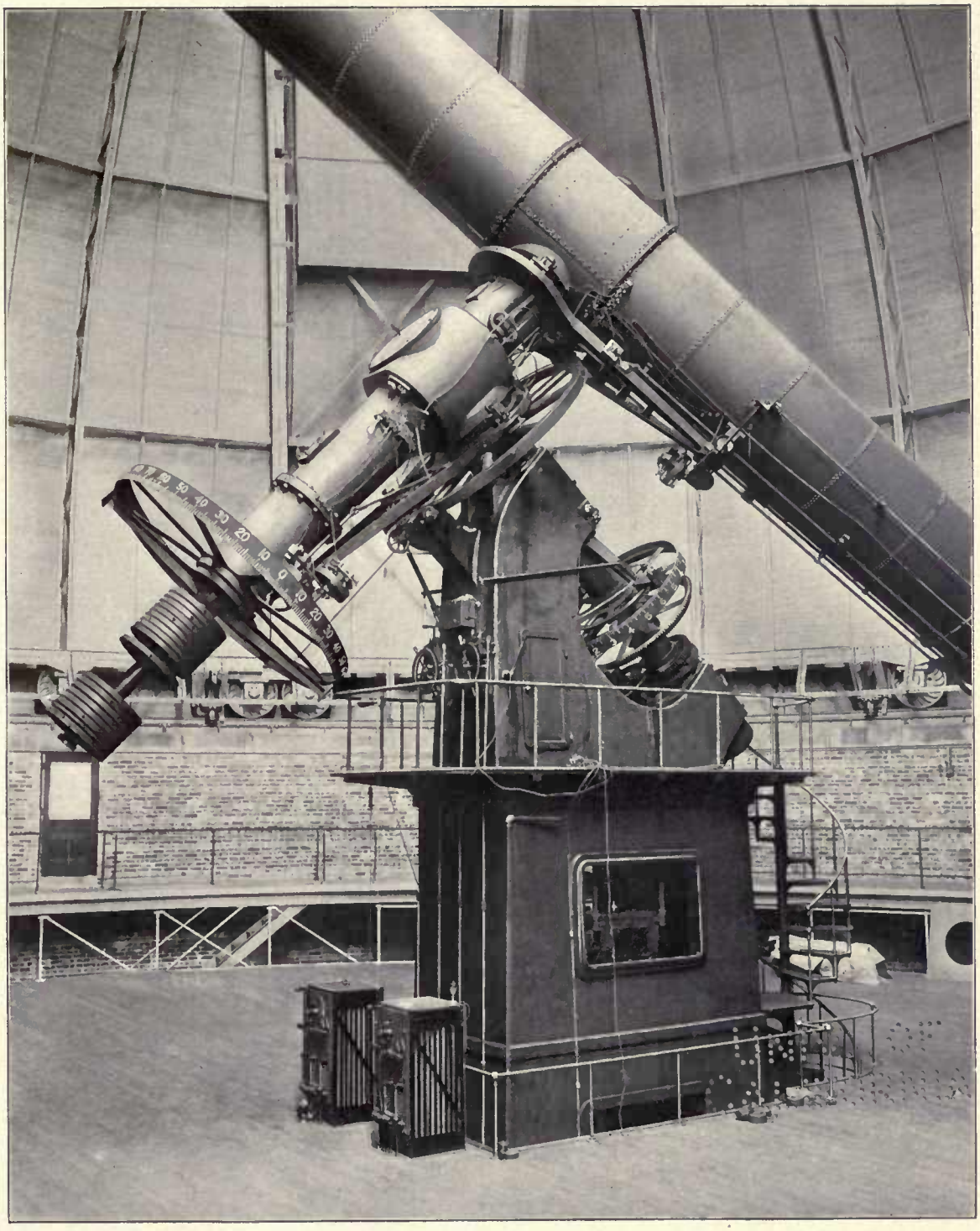
Plate XXXI

Stanford
University



EQUATORIAL HEAD OF THE 40-INCH YERKES TELESCOPE
VIEW FROM THE NORTHWEST

FROM THE WORKS OF
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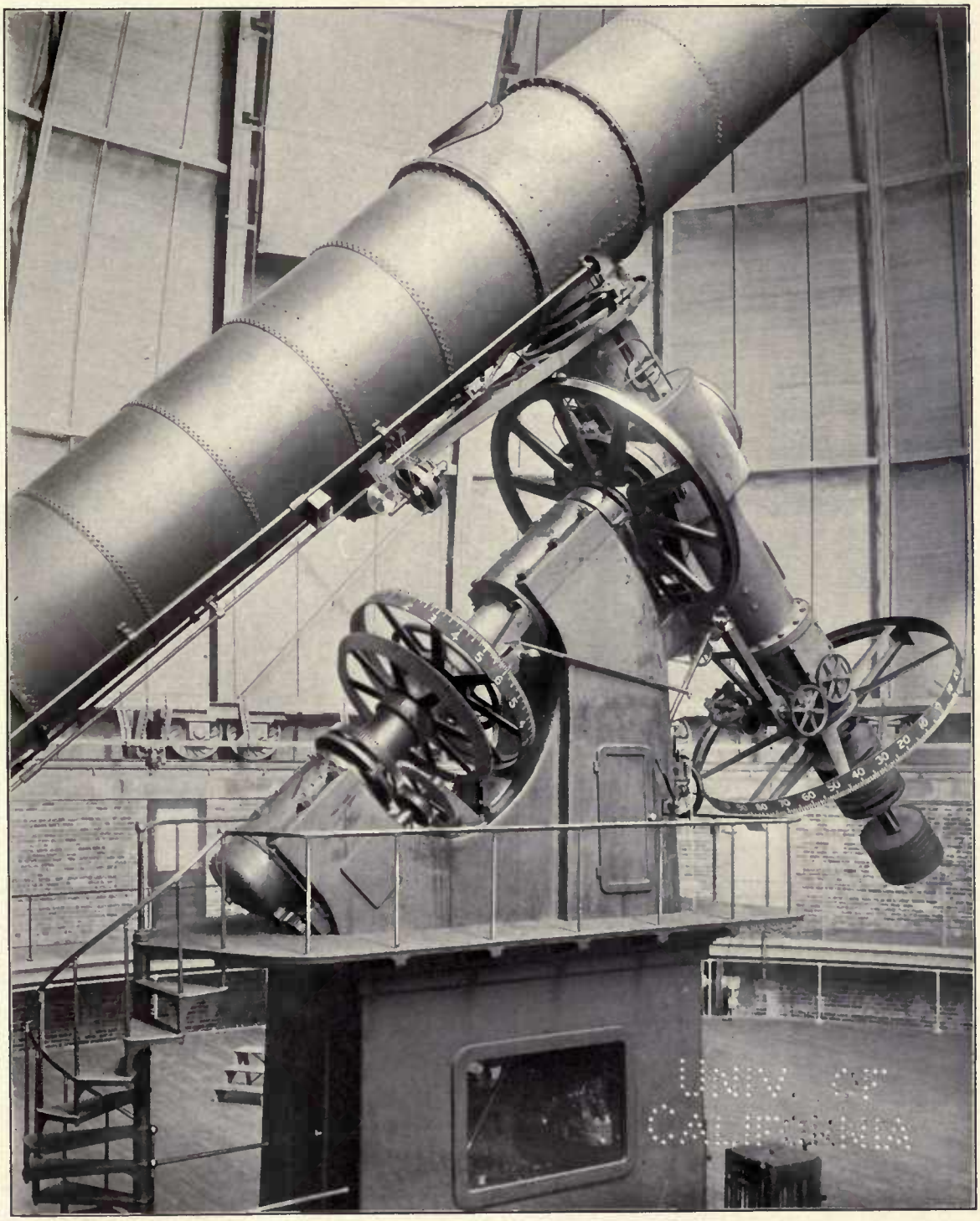
Plate XXXII

Ex Libris
Arthur Lee



EQUATORIAL HEAD OF THE 40-INCH YERKES TELESCOPE
VIEW FROM THE SOUTHEAST

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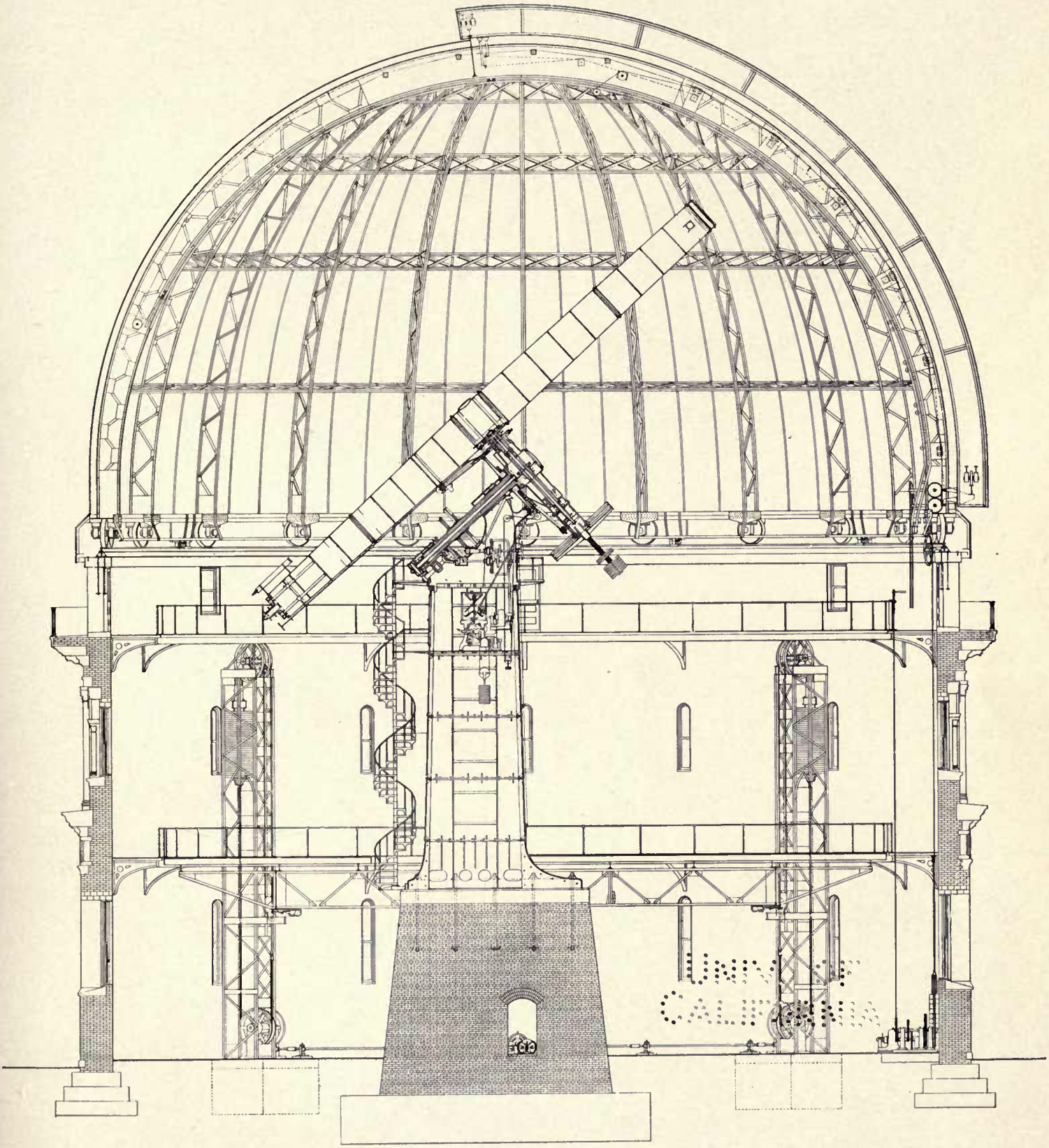

DESIGNED AND CONSTRUCTED BY
WARNER & SWASEY
CLEVELAND OHIO, U.S.A
1897

40 INCH TELESCOPE
90 FT. DOME AND 75 FT. ELEVATING FLOOR
FOR THE YERKES OBSERVATORY

Plate XXXIV

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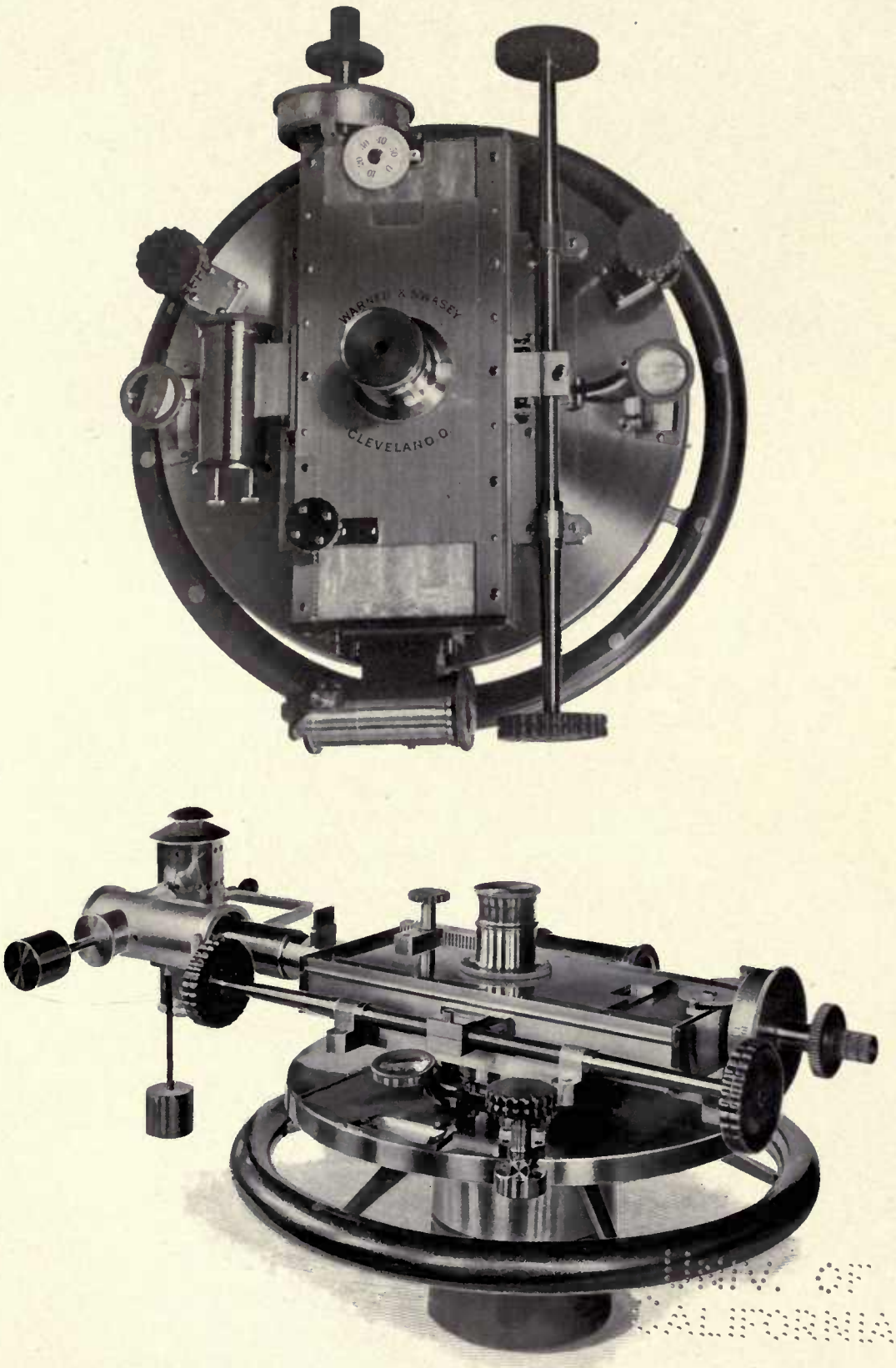


Plate XXXV

TWO VIEWS OF THE MICROMETER OF THE 40-INCH YERKES TELESCOPE

FROM THE WORKS OF
WARNER & SWASEY

UNIVERSITY OF CALIFORNIA

THE 40-INCH YERKES TELESCOPE AT THE WORLD'S COLUMBIAN EXPOSITION, CHICAGO, 1893

AS EXHIBITED BY
WARNER & SWASEY

Plate XXXVI

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